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Claims 36-39 and 91-95 remain under examination in this application. In the present Amendment, applicants have cancelled non-elected Claims 1-35 and 40-90 without prejudice towards their re-submission in a continuation or divisional application. Applicants have further amended Claim 36 to clarify the language of this claim. No new matter has been added.

In the Final Office Action dated June 25, 2004, Claims 36-39 and 91-95 were finally rejected under 35 U.S.C. § 103 as being obvious over U.S. 4,533,795 to Baumhauer, Jr. *et al.* ("Baumhauer") in combination with U.S. 6,366,678 to Madaffari *et al.* ("Madaffari") and U.S. 6,456,720 to Brimhall *et al.* ("Brimhall"). For the following reasons, it is believed that the Examiner's rejections are overcome, and that Claims 36-39 and 91-95 are all allowable.

A. The Examiner Has Not Made a *Prima Facie* Case of Obviousness Because the Cited Madaffari and Brimhall References Are Not Prior Art Against the Present Claims

In the Final Office Action, the Examiner concedes that the primary reference to Baumhauer fails to disclose every feature of the claimed invention, and cites two new references, the Madaffari and Brimhall patents, as disclosing the missing elements. However, it is believed that these two references are not prior art against the present claims. The present application was filed on January 6, 2000, and claims priority to U.S. Provisional Application Serial Number 60/115,011, filed on January 7, 1999, U.S. Provisional Application Serial Number 60/134,896, filed May 19, 1999 and U.S. Provisional Application Serial Number 60/157,872, filed October 6, 1999.

The Madaffari patent issued from U.S. Application No. 09/478,389 which was filed on January 6, 2000, the same filing date as the present application. The Madaffari patent also claims priority to the same three provisional applications (filed on January 6, 1999, May 19, 1999, and October 6, 1999) as does the present application. Thus, Madaffari is not prior art against this application, since it has the same effective filing date as the present application.

Similarly, the Brimhall patent issued from U.S. Application No. 09/468,769 which was filed on December 10, 1999. This was later than the filing dates of all three provisional applications to which the present application claims priority. It is believed that the pending claims of this application are all fully supported by provisional application 60/115,011, which

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was filed on January 7, 1999. Thus, the effective filing date of the present application is January 7, 1999, which pre-dates the date of the Brimhall patent as a reference. In any event, it is submitted that the Brimhall patent, even in combination with the primary Baumhauer reference, fails to teach or suggest the limitations of the present invention, such as the "housing and the printed circuit board (PCB) . . . configured to provide an electromagnetic interference (EMI) shield" around the transducer or other hearing aid components, as recited in independent Claims 36 and 91, or the EMI shield comprising an "electrically conductive housing and a printed circuit board having a conductive ground plane," as recited in independent method Claim 95.

Accordingly, the Final Rejections of Claims 36-39 and 91-95, which all rely upon the Madaffari and Brimhall patents, should be withdrawn, since these references are not prior art and/or fail to teach or suggest the limitations of the claimed invention. In addition, since the Examiner has not made a *prima facie* showing of obviousness absent the teachings of Madaffari and Brimhall, which is not valid prior art, it is respectfully submitted that the rejections of Claims 36-39 and 91-95 is overcome, and that these claims should be allowed.

B. Baumhauer Fails to Teach or Suggest Numerous Limitations of the Claimed Invention

In addition to the deficiencies regarding the secondary Madaffari and Brimhall references, described above, the Examiner's § 103 rejections are traversed on the ground that Baumhauer does not disclose or fairly suggest the present claims, and in many respects actually teaches away from the present invention.

The pending claims all relate to particular designs for *hearing aids*, whereas the Baumhauer reference relates specifically to a transducer that is formed as part of a semiconductor integrated circuit. Thus, although Baumhauer may mention hearing aids as one application of the disclosed semiconductor transducer, Baumhauer cannot be considered to render the present claims obvious when it does not teach or suggest the novel hearing aid designs that are the subject of the present claims.

For instance, with reference to independent Claim 36, the Baumhauer patent does not disclose a "hearing aid enclosure having a faceplate located at a proximal end of said enclosure, said faceplate having sound openings formed through said faceplate," a "housing" disposed at the

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proximal end of the enclosure, the housing containing a transducer formed of a diaphragm diaphragm extending in a plane parallel to and proximate to and opposite the faceplate; and a printed circuit board (PCB) within the hearing aid enclosure, the housing and the printed circuit board (PCB) being configured to provide an electromagnetic interference (EMI) shield around the transducer. As discussed in the Specification, the invention relates to a unique design for a hearing aid that includes a housing for a microphone diaphragm, such as an open ended metal housing, and a printed circuit board (PCB), which can include all the signal processing circuitry for the microphone, where the housing and PCB form an electromagnetic interference (EMI) shield around microphone. An additional advantage is that the microphone housing is disposed proximate to the faceplate-end of the hearing aid enclosure, such that the diaphragm is mounted parallel to and adjacent to the faceplate which faces outwardly from the inner ear. This provides an optimal acoustical path for sound to reach the microphone diaphragm. It is desirable to keep this acoustical path as short as possible to minimize undesired resonance, which may otherwise be introduced into the frequency response of the hearing aid system. Also, by arranging the housing and diaphragm adjacent to and parallel to the hearing-aid face plate, the diaphragm can be a relatively large area diaphragm, which helps increase sensitivity and reduce noise, and while the high aspect ratio of the microphone housing (width W versus length L) permits efficient use of space within the hearing aid enclosure. In the past, many microphones were of necessity disposed perpendicular to the faceplate so that the aspect ratio was less than 1:1. (See Specification at page 10, lines 16-25; page 12, lines 15-27). The Baumhauer reference does not teach or suggest these aspects of the present invention, and moreover does not discuss hearing aid designs at all.

Furthermore, with respect to Claims 38 and 39, the Baumhauer patent actually teaches away from the hearing aid designs of these claims by teaching an integrated semiconductor transducer device wherein a stated goal of the device is to reduce the area of the diaphragm. Baumhauer discloses transducers formed from semiconductor materials having "essentially nontensioned" diaphragm. The goal of the disclosed device is to make diaphragm thicker and reduce the diaphragm area. (See Baumhauer at col. 5, lines 8-16).

By contrast, the present invention relates to hearing aids having a relatively large-area diaphragm and microphone. As described in the present Specification at p. 10, the larger area

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microphone occupies a substantial portion of the surface area of the hearing aid face plate. For example, as recited in Claim 36, the ratio of the area of the microphone housing opposite the faceplate to the area of the faceplate is, in certain embodiments, at least 0.5. This is different from conventional hearing aids, in which the microphone must generally share substantial space on the hearing aid faceplate with a battery door. In the present invention, the area of the microphone housing adjacent the faceplate is extended to cover a larger percentage of the faceplate surface area. This is particularly beneficial for use in disposable-type hearing aids, in which there is no need for the microphone to share space with a battery door (since the battery is generally not replaceable). In addition, the present design advantageously permits larger area diaphragms, which help increase sensitivity and reduce noise. As discussed in the present Specification, the trend in hearing aid designs has been the opposite—smaller and consequently more expensive hearing aid microphones. By contrast, the present invention relates to a hearing aid design that permits reduced costs in manufacturing and assembling the microphone while maintaining high performance.

In addition, Baumhauer does not teach or suggest the hearing aid microphone of Claim 39, in which the microphone housing has a greater lateral dimension than a longitudinal dimension. This is an important advantage in providing the low-cost, high-performance hearing aids of the present invention. The relatively high aspect ratio (*i.e.* width W greater than length L) of the microphone housing permits a relatively large-area diaphragm to be located proximally adjacent to the faceplate so that unrestricted sound is allowed to flow through the faceplate and travel only a short distance to the diaphragm 103. This design is not taught or suggested in Baumhauer, which doesn't teach hearing aid designs at all.

Nor does Baumhauer teach or suggest the hearing aid devices of Claims 91-95. Independent Claim 91, for instance, recites a hearing aid which comprises an electrically conductive housing and a printed circuit board (PCB) configured to surround one or more hearing aid components, the housing and PCB being configured to provide an electromagnetic interference shield around the components. As the Examiner implicitly conceded in the present Office Action, this feature is not taught or suggested by the cited Baumhauer patent.

Accordingly, it is believed that the Final Rejections are overcome, and that Claims 36-39 and 91-95 are all allowable.

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CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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